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SUBSTITUTE SPECIFICATION

Communication terminal handling messages including graphics.

BACKGROUND OF THE INVENTION

Field of the Invention

The invention relates to the transmission of graphics as a part of the messaging between communication terminals.

Description of the Prior Art

On the Internet address http://www.kessler-design.com there is provided a graphic editor for generating a graphic picture on a Personal Computer in a predetermined formatted file, and to route this file via the Internet to a server where the message, based on the "Smart Messaging Concept" developed by the applicant is generated based on the received file. From here the message is routed to the cellular phone via an SMS gateway & SMS interworking Mobile Switching Center (MSC).

Philips Consumer Communications has exposed a new phone SAVVY™ GSM phone in Cannes 23. February 1999. This phone will be equipped with a message application using graphics. It is possible to include "clip art" like graphics in messages exchanged between two SAVVY™ phones. Basically this means that the "clip art" like graphics are handled as predefined characters and the character is transformed to a hexadecimal code in one phone, transferred back to the same predefined character in the receiving phone.

SUMMARY OF THE INVENTION

The invention provides a method for handling transmission of messages including graphics between communication terminals.

This purpose is obtained by a method for handling messages transmitted between communication terminals via a wireless network, and comprising

generation of a compound message including a text part and at least one graphical icon part and transmission of the message via the wireless network. The handling of the compound message generation comprises steps of reading of a user inputted text part and converting the inputted text into in a predefined message text format, adding a graphical part to the message, said graphical part including a record for each of said at least one graphical icon part in a graphical format, and adding information in the message defining the position of said at least one graphical icon part in the text part. Hereby the phones will be able to include a real graphical file into the message and the receiving phone will be able to decode the graphical icon without knowing the pattern in advance.

The invention furthermore relates to a communication terminal for handling messages and having a controller, a transceiver for communicating with a wireless communication network, and a user interface through which the user operates the terminal, the user interface including a display. The communication terminal furthermore comprises a message editor application by means of which the user is allowed to generate a compound message including a text part and at least one graphical icon part; said controller generates a message for transmission via said transceiver. The message includes a text part in a predefined message text character format, a graphical part including a record for each of said at least one graphical icon part in a graphical format, and information in the message defining the position of said at least one graphical icon part in the text part. The graphics used in the message may be found in a clip art like gallery including a plurality of graphical icons, or manually entered by the user by means of a graphical editor.

The invention furthermore relates to a message format including a text part and at least one graphical icon part. The message includes a text part in a predefined message text character format, a graphical part including a record for each of said at least one graphical icon part in a graphical format, and

information in the message defining the position of said at least one graphical icon part in the text part. Hereby an existing text message carrying concept such as for example SMS messaging in the GSM system is able to transport graphics when the receiving and transmitting terminals have respective graphical editors/readers for coding and decoding the messages.

According to the preferred embodiment this information is handled by the Smart Messaging Concept. This concept was disclosed by the applicant at the Cebit fair in March 1997 (Press release 20. March 1997) and discussed in details the document: "Smart Messaging Specification", Revision 1.0.0; September being available on the Internet address URL: www.forum.nokia.com/nf/concepts/smart/main.html. From this Internet address another document "Narrow-Band Sockets Specification", Revision 1.0, March 7, 1997 may be downloaded. This document describes the Narrow-Band Socket (developed by a joint effort by of Intel and Nokia) that enables applications to access various network data bearer services using a standard socket interface.

According to the invention it is very important to improve the character of sending messages in a cellular phone network from being a pure text messaging system to become a more sophisticated concept including graphics into messages and thereby attracting younger people who want to generate tags or symbols identifying themselves when sending messages.

In addition to offering a huge amount of templates or predefined graphics the invention according to the preferred embodiment offers the user a built-in graphics composer application by means of which the user is allowed to create graphics directly on the phone. The user will also not need to buy a PC interface cable, to be able to create graphics on a PC.

According to the invention it is essential to offer sending and receiving graphics directly from one phone to another. Furthermore the graphics are actually included into the message text.

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the present invention and to understand how the same may be brought into effect reference will now be made, by way of example only, to accompanying drawings, in which:-

Fig. 1 schematically illustrates a preferred embodiment of a hand portable phone according to the invention.

Fig. 2 schematically shows the essential parts of a telephone for communication with a cellular or cordless network.

Fig. 3 illustrates the message reception scenario according to the invention.

Fig. 4 illustrates the message transmission scenario according to the invention.

Fig. 5 shows a display sequence of a phone receiving a message including graphics according to the invention.

Fig. 6 shows a display sequence of a phone inserting graphics into a message for transmission according to the invention.

Fig. 7 shows a display of a graphical editor of a phone for manually entering a new graphical icon according to the invention.

Fig. 8 schematically shows the essential parts of a GMS editor/reader according to the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Fig. 1 shows a preferred embodiment of a phone according to the invention, and it will be seen that the phone, which is generally designated by 1, comprises a user interface having a keypad 2, a display 3, an on/off button 4, a speaker 5, and a microphone 6 (only openings are shown). The phone 1 according to the preferred embodiment is adapted for communication via a cellular network, but could have been designed for a cordless network as well.

According to the preferred embodiment the keypad 2 has a first group 7 of keys as alphanumeric keys, a soft key 8, a clear key 9, and a navigation key or a scroll key 10. The present functionality of the soft key 8 is shown in a separate field in the display 3 just above the key 8.

Fig. 2 schematically shows the most important parts of a preferred embodiment of the phone, these parts being essential to the understanding of the invention. The preferred embodiment of the phone of the invention is adapted for use in connection with the GSM 900MHz and GSM 1800 MHz network, but, of course, the invention may also be applied in connection with other phone networks. The processor 18 controls the communication with the network via the transmitter/receiver circuit 19 and an antenna 20 that will be discussed in details below.

The microphone 6 transforms the user's speech into the analog signals, the signals formed thereby are A/D converted in an A/D converter (not shown) before the speech is encoded in an audio part 14. The encoded speech signal is transferred to the processor 18, which is supports the GSM terminal software. The processor 18 also forms the interface to the peripheral units of the apparatus, including a RAM memory 17a and a Flash ROM memory 17b, a SIM card 16, the display 3 and the keypad 2 (as well as data, power supply, etc.). The audio part 14 speech-decodes the signal, which is transferred from the processor 18 to the earpiece 5 via a D/A converter (not shown).

Receiving messages including graphics.

The ability to receive and send graphics via messages will require the features of storing a large amount of pre-specified graphics inside the phone (Clip-art / graphics templates), the ability to insert graphics into a message being composed, a method to browse the huge amount of graphics and a possibility to save received graphics, and to afterwards use them in message composing. According to the preferred embodiment of the invention it is furthermore possible to generate new graphics on the wireless communication terminal or the phone 1.

According to the preferred embodiment when the user receives a message, the reception will be indicated in idle mode of the phone 1, like the first image of Fig. 5. A header 50 includes some icons informing the user about for example the status of phone settings, time and un-read messages present in the phonebook. Furthermore it is seen from the first line that a new message is received, and the second line indicates the phone number or the name of the sender if this can be found in the phonebook based on the phone number of the sender. The next two lines indicate the start of the message. If several messages are received, the initial text from the newest message will be displayed. The functionality of the soft key 8 will advantageously be "read" as seen from the first display. Pressing this softkey 8 allows the user to read and edit the entire message as shown in the second display ofFig. 5.

In this case, the user has chosen to read the message, simply by pressing the soft-key 8 having the "Read" functionality. This will directly enter the message viewing as seen in the second display of Fig. 5. Now the functionality of the soft key 8 changes to "option", and by pressing this key 8 the user gets direct access to e.g. delete, edit or forward the message. By using the scroll key 10 the user may scroll through the message as seen in the third display from the second and third display it is seen that the header 50 now identifies the sender of the message. Furthermore it is seen that the

message includes graphics 51 formed as two Dolphins (the trademark of the Danish operator Sonofon).

Graphics can basically be of two types: "Large graphics" - as the Dolphins shown in the third display; and "In-line graphics" that means graphics with maximum height of that corresponding to the height of the text, e.g. 8 pixels. "In-line graphics" are placed in a text line and displayed as a text character. However the handling of the In-line graphics in the message will be similar to the handling of Large graphics.

The fourth display shows a message including "In-line graphics" 52. The width of the graphics can basically be up to the width of a text line. However a maximum width of two-three characters makes it easier to handle the message display. If the user (in the second, third or fourth display) now wants to save the graphics the soft key 8 is pressed having the "Options" functionality and select "user graphics" in the option list displayed in the fifth display.

When the "User Graphics" option is selected a list (page wise) of all the graphics stored in the message will be given. In the message shown in Fig. 5 second and third display only a single graphic 51 is included. The default options on the soft-key 8 will now allow the user to store the graphics directly to the "user graphics" gallery of the phone 1 for later use of the graphics.

Fig. 3 illustrates the message received scenario. In step 100 a message is received and in step 101 the GRAPHICAL MESSAGING SYSTEM (GSM) reader 30 checks whether the received message is in the GMS format or not. If not the GMS reader 30 just starts to wait for the next message. Otherwise the GMS reader 30 reads the message and starts to identify the text part and possible graphics in step 102. When this is done the GMS message is displayed for the user in step 103. In step 104 the user is allowed to store the received graphics and this is done in step 105 upon request from the user. In

step 106 the display of the messages remains until the user wants to close the message.

InFig. 4 it is shown that the GMS editor starts in step 110 when the user wants to enter a GMS message. In step 111 the entered text is read and when the user wants to enter graphics the user can indicate this in step 112. Then the user will have the choice (in step 113) of entering a new graphic by means of using the graphical editor 35 (step 114) of by recalling a graphical icon stored in one of the memories 32 or 33 (fig. 8) in step 115. When the user does not want to enter further text or graphics the user can request transmission in step 116 whereby the GMS message is transmitted in step 117 and the application is closed. In step116 the user will be allowed to close the application without transmitting the message.

Sending messages including graphics.

The user has the ability to insert graphics into the message. The user can insert graphics from both a pre-defined Clip-art directory, and from the "user graphics" gallery. In the first display of Fig. 6 the user has started to compose a message. The soft-key 8 now allows the user directly to send the message, but by using the scroll key 10 alternative functionalities, including insert of graphics in the option called "Insert Graphic" as seen in the second picture of Fig. 6. By selecting the "Insert Graphics" option the user will be given a list of graphics groups, like: User Graphics, Animals, Business, Cartoons etc. as shown in the third display of Fig. 6.

This list will contain logical groups of graphics from the clip-art database, and - as the first item - the complete list of the graphics stored by the user. The list will also contain an item called "In-line icons", which will contain icons that can be included in the text lines, preferably having a maximum height corresponding to 8 pixels. Preferably, the list will also contain CLI icons, start-up graphics etc. Selecting any of the items in this list, will give the user a list of all the graphics in the group. Selecting for example the item called

"Animals" could give one of the graphics shown in the fourth or fifth display of Fig. 6. Scrolling down with the scroll key 10 will show the next graphic in the "Animals" group. Pressing the soft-key 8 having the functionality "Insert", will insert the graphic into the message text at the position of the cursor 53 (first display of Fig. 6). The graphic is now inserted into the text, and the editor is ready for insertion of a new word to be added after the graphic as shown in the sixth display of Fig. 6.

According to the invention it is very important to improve the character of sending messages in a cellular phone network from being a pure text messaging system to become more sophisticated to permit including graphics into messages and thereby attracting younger people who want to generate tags or symbols identifying themselves when sending messages.

The graphics editor basically allows the user to edit and define any pixels in the display. The pixel editor display is displayed in Fig. 7 and each pixel in the final drawing consists of 3 x 3 pixels in the editor. The current position of the cursor is indicated with a hollow pixel 70. A small preview 71 of the final drawing can be shown in the lower right corner of the display. By using the soft key functionality "Options", the user can for example invert a specific pixel. The basic soft key functionalities under "Option" could allow the user to simply invert pixels individually, but functions like "Circle", "Insert Text", "Reverse all" will also be included. The cursor or hollow pixel 70 is moved in the display by means of navigation means. The navigation key 10 only allows the user to navigate in two directions, and therefore it is preferred to dedicate the "2", "4", "6" and "8" keys for moving the cursor in the four directions of the display. However an improved embodiment could include a four directional scroll key.

Animations.

Like with messages and graphics, the graphical reader could offer the user a variety of pre-defined animations, which the user can attach to different

"events" in the user interface. These events could for example be when entering a menu item, start-up animations, when an incoming call appears (for example CLI Group dependent), when the keyguard is activated or de-activated, etc.

It is evident that the invention supports a scenario in which the user creates the user's own animations, for example on a Personal Computer and then downloads the animation to the phone which is used just like the pre-defined animations. The user can just send the animation to another user.

Basically these animations are a sequence of pre-stored graphics that are displayed as a sequence. An animation generator has to be able to identify and access the individual graphics in a memory. Furthermore a set of parameters has to be present for the individual animation and the parameters must contain an identification of a start event, such as start up of the phone, detection of an incoming call etc. Furthermore the refreshing time or period has to be identified that is the time one graphic is displayed before it is replaced by the next graphic. Finally the duration of the animation has to be given and this will typically be when the full animation has been played once, or when the graphics in the full animation have been played as an endless sequence for example two or three times.

Graphical Messaging System.

The GMS is able to transport text, pictures and animations as one entity in messages handled by for example the Nokia Smart Messaging format. The Nokia Smart Messaging format is presently used in connection with the GSM messaging system and therefore the overall concept may be regarded as well known to a person skilled in the art. The format of the messages including graphics transmitted from one phone to another according to the preferred embodiment of the invention will be described below with reference to Fig. 4. The message format is based on the Nokia/Intel Narrow Band Socket (NBS) specification. This format is already well known and used for a number of

services already implemented in a wide range of Nokia products, for example. Over The Air (OTA) business cards, OTA ringing tone download etc.

A GMS reader 30 is listening to a Narrow BAND Socket (NBS) port 5514 decimal [158A hexadecimal] via the processor 18. The received message is displayed in the display 3 and temporarily stored in a memory 34. The reader 30 identifies the text part and the graphics part of the message and the user is as mentioned above, able to store the received graphics in a "User Graphics" memory 32 for later user.

It is well known to use text editors in for example GSM phones for generating a text for a message to be transmitted. A GMS editor 31 replaces this text editor and acts fully as such one when handling text alone. The user is able to enter a text part by using the text entry means – preferably the alphanumeric keys, and when the user via the "Option" functionality in the soft key 8 starts to enter graphics the user can get one precoded graphical icon from a memory 33 including a plurality of clip art like graphics – preferably included in a plurality of groups (animals, business, cartoons etc.) in order to ease the search for a specific icon. Alternatively the user can enter the desired pattern by means of a graphical editor 35 (display is shown in Fig. 7) and store the manually entered graphic in a "User graphic" memory 32 and use the graphic in the GMS editor. The "User graphic" memory 32 includes manually entered graphics, graphics received in a message, or clip art like graphics amended in the graphical editor 35.

GMS format.

The actual GMS format will be based on the Nokia Smart Messaging format, but the actual format will be as follows:

< GMS-message> ::= <GMS-header>< GMS-item>$^{+}$

< GMS-header> ::= < GMS-Version>

< GMS-Version> ::= '0' ;'Identifier for GMS version, current version is zero (0).

<GMS-item> ::= "00" <GMS-item-length> <ISO-8859-1-char>*
| "01" <GMS-item-length> <UNICODE-char>*
| "02" <GMS-item-length> <OTA-bitmap>
| "03" <GMS-item-length> <Ringing-tone-programming-language>
| <common-hex-digit> <common-hex-digit> <GSM-item-length>
<unspecified-data>
; 'Two hex characters who specify the GSM item type, if not 00...03.
Tokens 04 ... FF are reserved. If one of these values is present, the
application may either stop processing or skip that GMS-item.'
<unspecified-data> ::= <default-char>* ; 'A stream of octets'
<GMS-item-length> ::=
<common-hex-digit> <common-hex-digit>
<common-hex-digit> <common-hex-digit>
; 'Number of octets in the following field, in hexadecimal.
Note that there are two octets per each Unicode character.'